

# **BACK CARTRIDGE COUPLING STRUCTURE**

## **BACKGROUND OF THE INVENTION**

### **Field of Invention**

The present invention relates to a back cartridge structure, which is used in the handheld data processor, and more particularly to a back cartridge coupling structure that allows the body of the handheld data processor to cause no scratch when both two are jointed with each other together.

### **Related Art**

At present, the back cartridge is used to provide the handheld data processor a sufficient electric power, it can be furnished a backup battery or other devices that can expand the function of the handheld data processor (such as CF, SD card receptacle module or wireless communication module). But, the coupling between the current back cartridge and the body of handheld data processor, such as Visor series products produced by Handspring, is processed by means of the upward-faced connector slot disposed in the body and the 90° projected, downward-faced connector disposed on the back cartridge. The back cartridge must be slid face-to-face relative to the body in order to let the connector slot and connector be jointed when both are coupled. Therefore, the face of both will be scratched over a long period of time. Also, a larger gap must be maintained between both so that they can be slid smoothly. And in a consequence, the back cartridge shakes easily after the coupling.

Therefore, it is important for us to invent a back cartridge coupling structure in order to let the faces of the body of the handheld data processor and back cartridge not to scratch each other when both are coupled together.

## SUMMARY OF THE INVENTION

The object of the invention is to provide a back cartridge coupling structure, enabling the faces of a back cartridge and body not to scratch each other through the coupling in a vertical direction.

5        Accordingly, the body of a handheld data processor comprises a connector slot disposed at the coupling face thereof. A back cartridge comprises a connector, corresponding to the connector slot, disposed on the coupling face thereof. The coupling structure comprises a seizing element and outer lining; the seizing element is disposed on the coupling face of the body, and the outer lining, corresponding to the seizing element, is  
10        disposed at one end of the back cartridge and can be moved in parallel relative to the coupling face of the back cartridge. First, press the two coupling faces of the body and back cartridge toward each other face to face in vertical direction when both want to be coupled together so as to let the connector be inserted into the connector slot (it also means that the back cartridge is placed on the body). Thereafter, the outer lining is then slid in  
15        parallel relative to the coupling face of the back cartridge. And, the body and back cartridge are coupled together when the back cartridge is stuck by the seizing element.

Further scope of applicability of the present invention will become apparent from the detailed description given hereinafter. However, it should be understood that the detailed description and specific examples, while indicating preferred embodiments of the invention,  
20        are given by way of illustration only, since various changes and modifications within the spirit and scope of the invention will become apparent to those skilled in the art from this detailed description.

## BRIEF DESCRIPTION OF THE DRAWINGS

The present invention will become more fully understood from the detailed description  
25        given hereinbelow illustration only, and thus are not limitative of the present invention, and wherein:

FIG. 1 is an explosive view of a preferred embodiment of the present invention;

FIG. 2 is a sectional view of a preferred embodiment of the present invention, showing a sliding clasp hooks up a seizing element when a body and back cartridge are coupled together;

5        FIGS. 3A, 3B and 3C are schematic views of a preferred embodiment, showing coupling motions of a body and back cartridge; and

FIGS. 4 and 5 are schematic views of another embodiment of the present invention, showing another type of seizing element.

### **DETAILED DESCRIPTION OF THE INVENTION**

10        Please refer to FIG. 1, a back cartridge coupling structure 30 according to the invention is used in handheld data processor 1, which comprises a body 10 and back cartridge 20.

The body 10 comprises a coupling face 11 and connector slot 12; the connector slot 12 is disposed in the coupling face 11.

15        The back cartridge 20 comprises a coupling face 21 and connector 22; the connector 22, corresponding to the connector slot 12 of the body, is disposed on the coupling face 21. The connector 22 and connector slot 12 can be jointed together when the body 10 is coupled to the back cartridge 20.

20        The coupling structure 30 comprises a seizing element 31, outer lining 32, sliding groove 33 and detaining hole 34. The seizing element 31 is disposed on the coupling face 11 of the body 10 and is parallel to the side edge of the coupling face 11 of the body 10. The outer lining 32, corresponding to the seizing element 31, is disposed at one end of the back cartridge 20 and comprises a projecting column 321, button 322 and sliding clasp 323. The sliding clasp 323 is disposed corresponding to one end of the seizing element 31 in order to hook up this end of seizing element 31 to prevent the back cartridge from falling  
25        down in the direction opposite to this end after the body 10 is coupled with the back

cartridge 20, as FIG. 2 shown. The sliding groove 33 corresponding to the projecting column 321 is disposed in the back cartridge 20 so as to allow the projecting column 321 to be slid therein. Therefore, the outer lining 32 can be slid in parallel relative to the coupling face 21 of the back cartridge 20. The detaining hole 34 corresponding to the button 322 is disposed in the body 10 in order to get the button 322 stuck therein when the body 10 is coupled to the back cartridge 20.

As FIG. 3A, 3B and 3C shown, first, press the two coupling faces 11, 21 of the body 10 and back cartridge 20 toward each other face to face in vertical direction when both are coupled together so as to let the connector 22 be inserted into the connector slot 12 (it also means that the back cartridge 20 is placed on the body 10). Thereafter, the outer lining 32 is then slid in parallel relative to the coupling face 21 of the back cartridge 20 (the projecting column 321 is slid along the sliding groove 33). And, the outer lining 32 is stuck by the seizing element 31 when it is slid so as to increase the tightness of the coupling of the body 10 and back cartridge 20, the sliding clasp 323 hooks up one end of the seizing element 31, the button 322 is detained in the detaining hole 34 so as to couple the body 10 and back cartridge 20. By the way, the disposition of the buttons 322 and detaining hole 34 can let both be coupled tightly.

Furthermore, refer to FIGS. 4 and 5, the end of the seizing element 31 that contacts with the outer lining 32 first is thinner, and other end of the seizing element 31 that contacts with the outer lining 32 last is thicker (it is also the time that the coupling of the body 10 and back cartridge 20 is completed), and such kind of the design can be used in the profile of the seizing element 31 whatever it is in a direction parallel or perpendicular to the coupling face 11 so as to increase the tightness of two sides of or a direction perpendicular to the body 10 and back cartridge 20.

Of course, the coupling face 11 is unnecessary at the back face of the body 10. It can also be at the front face thereof or other positions.

The back cartridge coupling structure according to the present invention doesn't cause

the surfaces of the back cartridge and body to be scratched, because the back cartridge is pressed toward the body face to face in vertical direction while coupling. Furthermore, it is convenient to use only the outer lining according to the present invention to couple the back cartridge and body tightly.

- 5        The invention being thus described, it will be obvious that the same may be varied in many ways. Such variations are not to be regarded as a departure from the spirit and scope of the invention, and all such modifications as would be obvious to one skilled in the art are intended to be included within the scope of the following claims.